

Delivering safety

Employee ingenuity is helping reduce injury risk at sites throughout Boeing

By Christine Hill

At the Boeing site in Fishermans Bend, Australia, three employees came up with a better and safer way to work with heavy rolls of material used to make the 787 Dreamliner's composite movable trailing edges.

The improvements eliminate possible injuries from bending down, lifting and dragging. "Basically backs, knees, shoulders and arms," said Ross Garlick, a safety coordinator for Boeing Aerostructures Australia.

In St. Louis, a Boeing team on the C-17 program is using discarded packaging foam and duct tape to prevent injuries. And at Boeing's 737 jetliner plant in Renton, Wash., employees helped with ergonomics and safety challenges that came with a new assembly method for the airplane's wings.

These are just three of the many ways, throughout the company, that Boeing employees are changing processes and tools to improve ergonomics—the ease and safety with which tasks can be performed. They're proving that even simple changes can drive injuries out of the workplace.

Boeing has set an aggressive goal of reducing the number of injury cases that result in lost work by 25 percent by 2013. To that end, Boeing last year launched a companywide effort called Safety Now. Mary Armstrong, vice president of Environment, Health and Safety, explained that at the core of Safety Now are two ideas: "We're all responsible for our safety and the safety of our co-workers, and we're improving the design of our processes and our products to create safer workplaces," she said.

Here is a look at how those Boeing employees in Renton, St. Louis and Fishermans Bend took the initiative to improve safety at their workplaces.

At the Fishermans Bend site, the rolls of fabric used to make 787 movable trailing edges arrive in 90-pound (40-kilogram) boxes. Previously, one employee had to drag each box from a rack onto an electric lifter that raised it to the right height. Then two employees lifted the fabric roll out of the box and onto a cutting machine.

Because the entire roll isn't used all at once, the employees then had to reverse the process. It resulted in a lot of daily dragging and lifting with the risk for ergonomic injuries,



according to the team. So quality engineer Sam Scicluna and teammates Goran Najdovski and Won Jae Lee designed rollers for the rack, as well as a roller-equipped frame that fits onto the electric lifter. They also modified the loading frame so the lifter moves the rolls directly into position. And, in a simple process change, they now cut away part of the roll packaging as soon as a shipment arrives so they can position the bar that holds the roll on the cutting machine without manually lifting the roll from its box.

The three were not only recognized for their efforts, but now other parts of the factory are making similar improvements. "We're a small team, so we look out for one another," Scicluna said.

A St. Louis team that assembles the C-17 main landing gear pods showed similar initiative. "One idea we came up with was to have pads on all protruding tooling so people don't bang knees and shins," said Jim Daniels, aircraft assembler and team leader.

To make the pads, the team used discarded packing foam secured with duct tape. Previously, they had arranged for tool cribs to "ergo-wrap" vibrating drill motors and rivet guns,

reducing the risk to users of joint pain, carpal tunnel syndrome and shoulder pain.

Daniels said safety has always been the team's priority and a commitment, and has paid off with a 17-month perfect safety record. "If we see an employee without safety glasses, we say something," he said. "We've always worked that way."

When Boeing changed its 737 wing assembly line in Renton, the development team asked employees for help making changes that not only improved production efficiency but also ergonomics and safety. Employees set up mock production areas where they could test production line work heights as well as the weight of tools and parts. An ergonomics expert was on hand to make adjustments. As a result, mechanics use lighter, counterbalanced, automated tools that put them in a better ergonomics position to perform their tasks.

"Because employees were involved with the redesign from start to finish, they were able to 'design in' safety and ergonomics," said Les Weige, 737 Environment, Health and Safety director. "Totally rethinking the way we build products, then ensuring that improved



safety and environmental impacts are part of the new process, is huge for us. Taking on these kinds of initiatives and continuing to attack our most difficult ergonomics issues speaks volumes about our commitment to employee safety." ■

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For information, tools and resources on ways to improve workplace safety, visit the Safety Now site at <http://safetynow.web.boeing.com> on the Boeing intranet.

PHOTOS: (Left) Deandre Harris, a Next-Generation 737 mechanic in Renton, Wash., works on the 737 horizontal wings assembly line, where employee input helped improve efficiency, safety and ergonomics. **MARIAN LOCKHART/BOEING (Top)** Jim Daniels, an assembler on the C-17 team in St. Louis, uses a drill with a padded handle that reduces vibration that can contribute to ergonomic stresses and injuries. **RON BOOKOUT/BOEING (Above)** At Boeing Aerostructures Australia, Quality engineer Sam Scicluna (left) and Environment Health and Safety coordinator Ross Garlick use an in-house-designed lifter used to transport and load heavy rolls of fabric for composite lay-up. **ANDREW HENSHAW**

Workplace safety: Make it part of our DNA



In 2009, Boeing set a five-year goal to reduce its lost-workday injury rate by 25 percent. *Frontiers* spoke to Mary Armstrong, vice president of Environment, Health and Safety, to get her perspective on Boeing's progress toward this target.

How has Boeing's workplace safety performance been lately?

Overall job injuries at Boeing have dropped about 5 percent since 2008. That's a tremendous start toward our five-year goal. Still, there's a lot to do. Collectively, we're developing innovative ways to protect ourselves and our co-workers from injury. And there are some outstanding examples in this edition of *Frontiers* of what people and teams around the company are doing to prevent injuries.

Where is Boeing focusing its efforts?

Post-injury investigations often uncover ergonomics issues we can address through thoughtful process redesign. By analyzing the data, we have found the top 10 areas where injuries occur most often. The data also have shown us some of the root causes. Now, we're focusing our efforts on these high-leverage areas. As we make gains, we'll replicate these proven solutions in other areas around the company where people do similar work.

Are these the only areas we're focusing on through the Safety Now program?

Actually, the opposite is true. We're raising the bar on workplace safety in both manufacturing and office environments. For example, in our office areas during the past five years, ergonomics-related injuries that caused lost workdays dropped 45 percent. That's partly due to ergonomics focals who use Lean+ methodologies to help make workplace improvements.

What are the next steps?

By the end of 2011, major Boeing manufacturing sites will implement a common safety management system aligned to OHSAS 18001, the globally recognized standard, which we will tailor appropriately to meet our aerospace needs. By having a single safety management system, we will use similar tools

and metrics at all sites and programs across Boeing. This will enable us to consistently assess and manage safety risks—and understand how to best target our resources and how to design safety enhancements into our processes. This will give us a common way to meet safety-improvement targets, comply with safety and health regulations, and, most important, protect employees.

As a company, we build amazing machines that fly in unforgiving environments. Our success has depended on making flight safety part of Boeing's DNA. Workplace safety is equally important, and we intend to make workplace safety part of our DNA as well.

With our ongoing Safety Now effort, strong leadership at every level and the continued commitment of employees around the company, we have everything we need to achieve our aggressive goal of a 25 percent improvement in workplace safety. Keeping everyone safe at work is our responsibility and our right. It's up to all of us to get it done. ■

PHOTO: JIM COLEY/BOEING

These workplace-safety resources are available for employees:

An overall Safety Now guide, <http://ehs.web.boeing.com/sheadocs/safetynow/safety%20now%20guide.pdf>

Ergonomics Solutions Catalog, http://ehs.web.boeing.com/ergonomics/ergo_catalog.asp

Office Ergonomics Self-Help checklist, http://ehs.web.boeing.com/ergonomics/office_ergo.asp